

87

Date: Tuesday, 07/04/2009 10:23:54 AM  
 User: Julie Dawson

## Process Sheet

<b>Customer</b> : CU-DAR001 Dart Helicopters Services	<b>Drawing Name</b> : SHORT STEP ASSEMBLY
<b>Job Number</b> : 46996	
<b>Estimate Number</b> : 11999	
<b>P.O. Number</b> :	<b>Part Number</b> : D350591122
<b>This Issue</b> : 07/04/2009 <b>S.O. No.</b> :	<b>Drawing Number</b> : D2351
<b>Prsht Rev.</b> : NC	<b>Project Number</b> : N/A
<b>First Issue</b> : / / <b>Type</b> : LARGE FAB ASSY	<b>Drawing Revision</b> : E
<b>Previous Run</b> : 43113	<b>Material</b> :
<b>Written By</b> :	<b>Due Date</b> : 28/04/2009 <b>Qty:</b> 2 <b>Um:</b> Each
<b>Checked &amp; Approved By</b> : <u>JUD 09-04-07</u>	
<b>Comment</b> : Est Rev:E 02.10.21 Re-format; Incorporated D2351-041 IPP K J/RF	

## Additional Product

Job Number:



<b>Seq. #:</b>	<b>Machine Or Operation:</b>	<b>Description :</b>
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1.0	DC	DOCUMENT CONTROL
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HA 6a JUD 09/05/06

**Comment:** DOCUMENT CONTROL

Photocopy bluefile and type labels as per PPP D350-591-122 CHG004

SAD 09/05/06

✓ 2.0	D2244116	Step Extrusion
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**Comment:** Qty.: 0.5000 Each(s)/Unit Total : 1.0000 Each(s)

Pick:

Qty Part Number Description Batch

0.5 D2244-116 Extrusion

B38023

SAD 09-04-23 (2)

3.0	LARGE FAB 1	LARGE FABRICATION RESOURCE 1
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**Comment:** LARGE FABRICATION RESOURCE 1

1-Cut D2244-116 extrusion to 55.32" long as per Dwg D2351 using cutting table setup DT8185-G

2-Drill extrusion per Dwg D2351 using Jig DT8230 for rivets.

SAD 09-04-23 (2)

4.0	QC5	INSPECT WORK TO CURRENT STEP
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**Comment:** INSPECT WORK TO CURRENT STEP

SAD 09/04/24 (2)

5.0	BENDING	BENDING MACHINE - SKIDTUBES
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**Comment:** BENDING MACHINE


Bend as per dwg

DP

9-4-29

PTC  
(2)

Dart Aerospace Ltd

W/O: 46996		ESTIMATE: 11999		WORK ORDER CHANGES				
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	
9-4-29	5.1	Staub read; Bend as per DWG D 2351-042 using CNC Bender 1 and Folio FTO12. Use bend program 2351-042.		9-4-29 09/05/07				

Part No: D350-591-122 PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Tuesday, 07/04/2009 10:23:54 AM  
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## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: SHORT STEP ASSEMBLY

Job Number: 46996

Part Number: D350591122

Job Number:



Seq. #:	Machine Or Operation:	Description :
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6.0	QC5	INSPECT WORK TO CURRENT STEP
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Comment: INSPECT WORK TO CURRENT STEP

8 09/04/29 (2)

7.0	D28502	End Cap
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Comment: Qty.: 1.0000 Each(s)/Unit Total : 2.0000 Each(s)

Pick:

Qty	Part Number	Description	Batch
1	D2850-2	End Bracket	331409

PH 09-04-29 2

8.0	LARGE FAB 1	LARGE FABRICATION RESOURCE 1
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Comment: LARGE FABRICATION RESOURCE 1

1-Bevel Fwd and Aft end for welding

2-Weld Aft End Bracket per QSI 004 & Dwg D2351 using Welding Jig DT8033

A/R Aluminum Rod M110972

3-Do not Grind Flush

PH 09-04-29 2  
PH 09-04-29 2

9.0	QC9	VISUAL WELDING INSPECTION
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Comment: VISUAL WELDING INSPECTION

PH 09-04-30 (2)

10.0	QC5	INSPECT WORK TO CURRENT STEP
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Comment: INSPECT WORK TO CURRENT STEP

8 09/04/30 x2

11.0	HAND FINISHING1	HAND FINISHING RESOURCE #1
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Comment: HAND FINISHING RESOURCE #1

Chemical Conversion Coat as per QSI 005 4.1

SAD-ATT-4 04/04/00

12.0	QC3	INSPECT POWDER COAT/CHEMICAL CONVERSION
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Comment: INSPECT POWDER COAT/CHEMICAL CONVERSION

M-1 09/05/01

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

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## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: SHORT STEP ASSEMBLY

Job Number: 46996

Part Number: D350591122

Job Number:



Seq. #: Machine Or Operation: Description :

✓ 13.0 D2582 Step Leg Assembly



Comment: Qty.: 1.0000 Each(s)/Unit Total : 2.0000 Each(s)

Pick:

Qty Part Number Description Batch  
1 D2582 Step Leg Assy 40087 X1  
44293 X1

SAP 09-05-01  
09-05-01

✓ 14.0 MS20600AD4W3 Cherry Rivets



Comment: Qty.: 16.0000 Each(s)/Unit Total : 32.0000 Each(s)

Pick:

Qty Part Number Description Batch  
16 MS20600AD4W3 Rivet 21104 715

SAP 09-05-01

15.0 LARGE FAB 1 LARGE FABRICATION RESOURCE 1



Comment: LARGE FABRICATION RESOURCE 1

1-Rivet Leg Assembly as per Dwg D2351

SAP 09-05-01 (2)

16.0 QC5 INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

SAP 09-05-01 (2)

17.0 D267334 End Plate



Comment: Qty.: 1.0000 Each(s)/Unit Total : 2.0000 Each(s)

Pick:

Qty Part Number Description Batch  
1 D2673-34 End Plate 835887

SAP 09-05-01 2

18.0 LARGE FAB 1 LARGE FABRICATION RESOURCE 1



Comment: LARGE FABRICATION RESOURCE 1

1-Weld Fwd End Plate per QSI 004 & Dwg D2351  
A/R Aluminum Rod 1110130

SAP 09-05-01 2

2-Grind end plate flush.

SAP 09-05-03 (2)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
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## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: SHORT STEP ASSEMBLY

Job Number: 46996

Part Number: D350591122

Job Number:



Seq. #: Machine Or Operation: Description :

19.0

QC9

VISUAL WELDING INSPECTION



Comment: VISUAL WELDING INSPECTION

AD 09-05-05 (2)

20.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

S 09/05/05 (x2)

21.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Touch up Alodine

UMP / FL

09/05/05 (x2)

22.0

POWDER COATING

POWDER COATING



Comment: POWDER COATING

Powder Coat White Gloss (Ref: 4.3.5.1) as per QSI 005 4.3

START TIME:

3:30

OVEN TEMPERATURE:

320°

FINISH TIME:

4:00

FL 09/05/05 (2)

23.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Wing Walk per Dwg D2351 and QSI 005 4.4

Batch: m111013

UMP

09/05/06 (x2)

24.0

QC3

INSPECT POWDER COAT/CHEMICAL CONVERSION



Comment: INSPECT POWDER COAT/CHEMICAL CONVERSION

FL

09-05-06 (2)

25.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Pick Packing Kit

26.0

D22301

Lug



Comment: Qty.: 1.0000 Each(s)/Unit Total: 2.0000 Each(s)

Pick:

Packing Kit Qty Part Number Description Batch

46427

SS

09/05/06 (x2)

**Dart Aerospace Ltd**

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries



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## Process Sheet

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Drawing Name: SHORT STEP ASSEMBLY

Job Number: 46996

Part Number: D350591122

Job Number:



Seq. #:

Machine Or Operation:

Description :

1 D2230-1 Mounting Lug

27.0

D22303

Lug



Comment: Qty.: 1.0000 Each(s)/Unit Total : 2.0000 Each(s)

Pick:

Packing KitQty Part Number Description Batch

1 D2230-3 Mounting Lug B46516

28.0

D2856400

Abrasion Strip



Comment: Qty.: 0.6000 f(s)/Unit Total : 1.2000 f(s)

Pick:

Packing KitQty Part Number Description Batch

1 D2856-400 7.20" Abrasion Strip U6543

29.0

AN337A

Bolt



Comment: Qty.: 2.0000 Each(s)/Unit Total : 4.0000 Each(s)

Pick:

Packing KitQty Part Number Description Batch

2 AN3-37A Bolt M105425

30.0

AN413A

Bolt



Comment: Qty.: 3.0000 Each(s)/Unit Total : 6.0000 Each(s)

Pick:

Packing KitQty Part Number Description Batch

3 AN4-13a Bolt M110731

31.0

AN960JD10

Washer



Comment: Qty.: 4.0000 Each(s)/Unit Total : 8.0000 Each(s)

Pick:

Packing KitQty Part Number Description Batch

4 AN960JD10 Washer M110985

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

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## Process Sheet

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Drawing Name: SHORT STEP ASSEMBLY

Job Number: 46996

Part Number: D350591122

Job Number:



Seq. #: Machine Or Operation: Description :

32.0 AN960JD416 Washer



Comment: Qty.: 6.0000 Each(s)/Unit Total : 12.0000 Each(s)

Pick:

Packing KitQty Part Number Description Batch

6 AN960JD416 Washer M 110363

SS 09/05/06 (K2)

33.0 MS21042L3 Nut



Comment: Qty.: 2.0000 Each(s)/Unit Total : 4.0000 Each(s)

Pick:

Packing KitQty Part Number Description Batch

2 MS21042L3 Nut (or -3) M 110844

SS 09/05/06 (K2)

34.0 MS21042L4 Nut



Comment: Qty.: 3.0000 Each(s)/Unit Total : 6.0000 Each(s)

Pick:

Packing KitQty Part Number Description Batch

3 MS21042L4 Nut (or -4) M 110450

SS 09/05/06 (K2)

35.0 QC4 INSPECT 100% KITS FOR COMPLETENESS



Comment: INSPECT 100% KITS FOR COMPLETENESS

SS 09/05/06 (K2) (24)

36.0 PACKAGING 1 PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and pack for shipping as per PPP D350-591-122

Location: 80

PPP Rev: D

9/5/06

500

37.0 QC21 FINAL INSPECTION/W/O RELEASE



Comment: FINAL INSPECTION/W/O RELEASE

09/05/07 MF 09-05-07

Job Completion



W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

**DART**

DESIGN KE	DRAWN BY PH	<b>DART AEROSPACE LTD</b> HAWKESBURY, ONTARIO, CANADA	
CHECKED #	APPROVED #	DRAWING NO. D2351	REV. E SHEET 1 OF 2
DATE 05.11.14		TITLE HIGH FLOAT STEP ASSEMBLY	SCALE NTS
A	95.02.15	NEW ISSUE	
B	97.05.22	END CAPS CHANGED	
C	97.07.23	ADDED BUSHING AND FACING INFO	
D	98.12.17	CHANGED TO BEND, D2850 REPLACES D2357 & D2358, INCORP. DEO 9084	
E	05.11.14	UPDATE FINISHING NOTE	

**D2351 HIGH FLOAT STEP ASSEMBLY PARTS LIST**

Part No.	Description	QTY -041	QTY -042
D2351-041	High Float Step Assembly (LH)	X	
D2351-042	High Float Step Assembly (RH)		X
D2244-55.4	STEP EXTRUSION*	1	1
D2582	STEP LEG ASSEMBLY	1	1
D2673-34	STEP END PLATE	1	1
D2850-1	END BRACKET	1	
D2850-2	END BRACKET		1
MS20600AD4W3	RIVETS	16	16

\*cut per drawing

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NO 46996

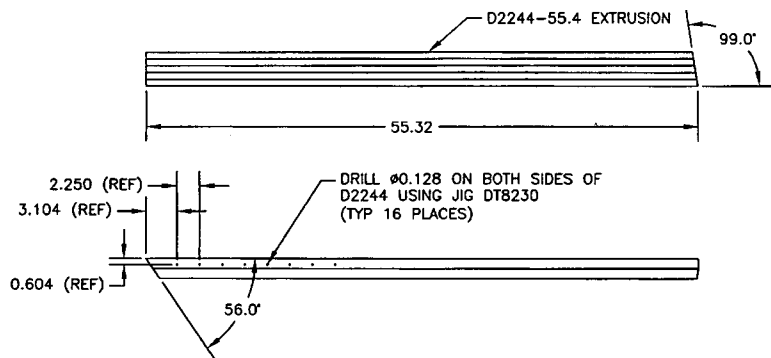
**RELEASED**  
05.11.28

PH  
ECN 1105  
**UNDER REVIEW**  
07.11.29  
PDR NCR# 263

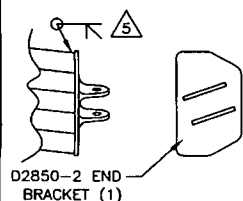
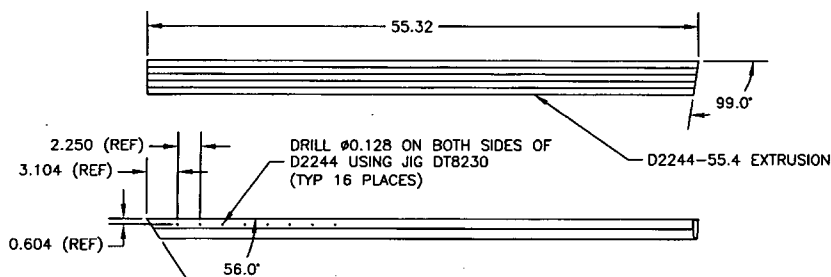
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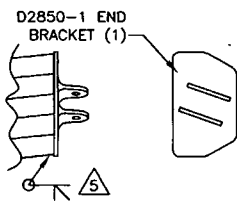
**D2351-2 CUTTING/DRILLING DETAIL**  
RIGHT STEP



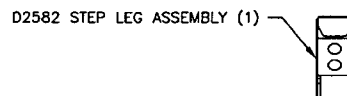
**D2351-1 CUTTING/DRILLING DETAIL**  
LEFT STEP



**DETAIL A**  
SCALE: 1:4



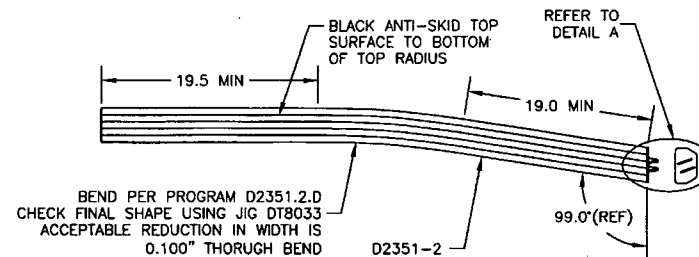
**DETAIL B**  
SCALE: 1:4



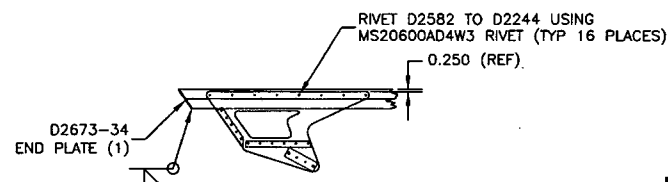
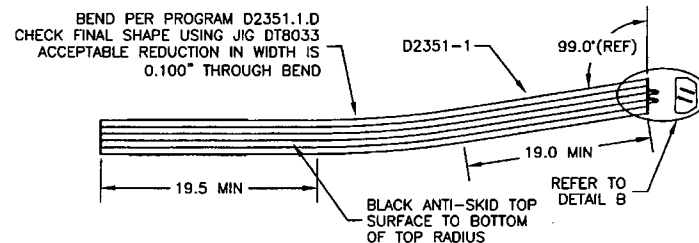
**GENERAL NOTES**

- 1) WELD PER DART QSI 004
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1  
POWDER COAT GLOSS WHITE (4.3.5.1) PER DART QSI 005 4.3  
BLACK ANTI-SKID PAINT PER DART QSI 005 4.4
- 3) ALL DIMENSIONS ARE IN INCHES  
TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) CHAMFER D2244 EXTRUSION 0.075"x45° BEFORE WELDING D2850-1 OR D2850-2 IN PLACE. DO NOT GRIND FLUSH.

**D2351-042 BENDING/ASSEMBLY DETAIL**  
RIGHT STEP



**D2351-041 BENDING/ASSEMBLY DETAIL**  
LEFT STEP



**RELEASED**  
05.11.28

**UNDER REVIEW**

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DESIGN KE	DRAWN BY PH	<b>DART</b>	<b>DART AEROSPACE LTD.</b> MARKHAM, ONTARIO, CANADA
CHECKED #	APPROVED #	DRAWING NO. D2351	REV. E SHEET 2 OF 2
DATE 05.11.14		TITLE HIGH FLOAT STEP ASSEMBLY	SCALE 1:12

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